HIROSE ELECTRIC CO.,LTD.

Integrated Report 2023

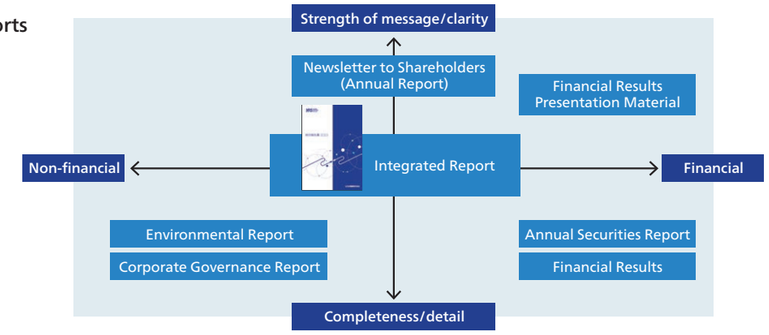
HIROSE ELECTRIC CO.,LTD.

Hirose Electric Co., Ltd.

Connecting the World, Connecting the Future

Connectors are small and inconspicuous electronic components.
They might not stand out, but they are still an essential component of the device.
By performing their connecting function, they make it possible to greatly enhance the functionality and convenience of electronic devices.
We believe that we can realize a more prosperous future and connected world through connectors.
The Hirose Group continues to propose solutions to various issues by creating “NEW.” connectors that have been realized through the collective wisdom of the Group and the world at large.

Purpose of Various Reports



How to Access the Reports

Integrated Report
https://www.hirose.com/corporate/en/ir/integrated_report/

Annual Securities Report / Quarterly Financial Report
https://www.hirose.com/corporate/en/ir/fr/

Financial Results Presentation Material
https://www.hirose.com/corporate/en/ir/frp/

Financial Results
https://www.hirose.com/corporate/en/ir/fs/

Newsletter to Shareholders (Annual Report)
https://www.hirose.com/corporate/en/ir/annual_report/

Environmental Report
https://www.hirose.com/corporate/en/csr/er/

Corporate Governance Report
https://www.hirose.com/corporate/en/csr/management/

Website Guidance

For Retail Investors
https://www.hirose.com/product/jp/pr/individual/ (in Japanese)

Governance
https://www.hirose.com/corporate/en/csr/management/

Social Responsibilities
https://www.hirose.com/corporate/en/csr/sr/

Environmental Responsibilities
https://www.hirose.com/corporate/en/csr/er/

Contents

Editorial Policy

This report has been compiled to allow all stakeholders to gain a well-balanced understanding of the various aspects of the Hirose Group including not only financial information such as business performance and strategies, but also non-financial information concerning the Group’s policies toward the environment, society and corporate governance. When editing this report, the Company referenced the International Integrated Reporting Framework published by the International Integrated Reporting Council (IIRC).

In addition to this report, the Company prepares an Annual Securities Report (in Japanese only), and a Newsletter to Shareholders along with various other communication tools.

Please visit the Hirose Group’s website to peruse the detailed information we post there.

* Note that in this report, the terms the Hirose Electric Group, the Hirose Group, the Group, and HIROSE refer to the entire HIROSE ELECTRIC Group, while Hirose Electric is used to refer to Hirose Electric Co., Ltd. on a non-consolidated basis.

This report has been translated from the Japanese original for reference purposes only. In the event of any discrepancy between this translated version and the Japanese original, the original shall prevail.

Applicable Period

From April 1, 2022 to March 31, 2023 (Portions of this report contain information about activities and initiatives from April 1, 2023 onward.)

Inseparable Principles

Inseparable Principles

A Small Company Connecting Wisdom

Acknowledging ourselves as “small,” we are always earnestly and modestly studying to achieve further growth for tomorrow. By leveraging the collective wisdom within the Group and from the world at large, we will evolve through our connecting business. This is the unchanging philosophy at the core of the Hirose Group.

The Ultimate Standard of Thought and Behavior

HIROSE Philosophy

The HIROSE Philosophy, which drives the continuous growth of the Hirose Group, consists of six values that embody the Inseparable Principles.
Every activity of ours is based on The Ultimate Standard of Thought and Behavior.

Ideal Vision

Co-creating Our Future Society with the “Power to Connect”

We aspire to achieve this vision through the practice of the Inseparable Principles and the HIROSE Philosophy. By expanding the circle of co-creation partners globally and providing new technologies and products to society we will contribute to the creation of a future society in which everybody can live comfortably.

Origin of the Inseparable Principles

“A Small Company Connecting Wisdom” was born from the actual experiences of Hideki Sakai, our de facto founder. Joining the Company in 1952, Sakai was made responsible for engineering as the only person in the department. Learning from customers, subcontractors and sometimes competitors, he succeeded in developing Japan’s first entirely domestic connector in 1957. In the 1960s, Sakai had the opportunity to visit a connector manufacturer overseas. Upon seeing this rival with its overwhelmingly large presence both in scale and sales, Sakai came up with the fabless strategy of “conduct development in-house, and outsource manufacturing.” Japan is home to a group of excellent specialist companies that support this strategy, which led to the Company choosing to work in cooperation with such partners rather than aiming for self-sufficiency.

At the heart of the Hirose Group is the Inseparable Principles of always remembering that, irrespective of the changing times, “we are the smallest one” and of remaining earnest and humble while seeking to grow along with our partners.

Hideki Sakai

Continuing to Be a “High Flier”
To achieve continuous growth, each of us must look upward, set goals, and continue to take on new challenges.

High Added Value
To gain a high level of satisfaction and trust by grasping needs of our customers and the market and providing products and services with value unique to the Hirose Group.

The Principle of “Being Small”
We must see ourselves as “small,” learn with honesty and humbleness, and aim for limitless growth for a tomorrow greater than today.

Always Taking the Lead, Pursuing the Cutting Edge, Achieving Differentiation
Create differentiating concepts that serve customers and deliver value ahead of the competition, at the exact timing the customers desire.

A Small Company of Smart People
Each employee will improve by working as if the company were their own business while bearing an awareness of achieving the best results. A team of “strong individuals” will aim to maximize productivity.

Connecting Wisdom
We will take a broad view of the world, actively connect internal and external wisdom, and create new value through communication and team work.

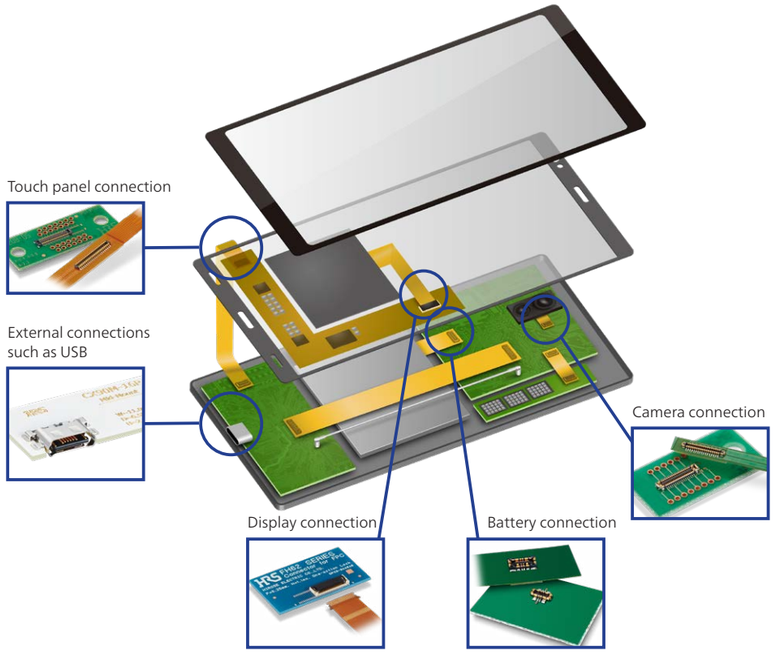
Contribution of Connectors

Connectors are an indispensable part of every kind of electronic device and equipment, and the digitalization of society has led to a broadening of the area in which they are used.

The connector is a component whose primary purpose is to connect and disconnect electricity. A familiar example of this is the connector with a cable, and a socket is also a kind of connector. In fact, large numbers of connectors are also used inside items of equipment, out of the sight of the consumer, and the digitalization of society and the development of electronic control have led to even higher growth in demand for connectors.

The roles and uses of connectors

Smartphones and other electronic devices are built from combinations of functional parts called "modules." The role of connectors is to provide electrical and mechanical links between these modules. When new functions are added to such devices, the number of modules generally increases, and this results in a need for new connectors. Through the use of connectors, the equipment manufacturers that are our customers can connect modules together to assemble their devices, or change the combination of modules used to easily increase the number of variations in their lineups.



Modules embedded in smartphones

- Display
- Camera
- Battery
- Antenna
- Touch panel
- Fingerprint sensor
- Speaker
- Microphone
- Side key
- External interfaces

etc.

The function of a connector is simple, but if a malfunction occurs in this connecting part, the module stops functioning.

We of the Hirose Group place great importance on reliability, and our goal is to create differentiated products that meet or exceed customer expectations.

Contribution to People

Contributing to work safety

Improving productivity (speeding up and simplifying work)

Connectors are components designed to be mated and unmated easily, without the use of tools. Of course these contribute to automation in factories, but they also play an important role in areas where manual tasks are required in infrastructure, housing and other industries. Work on construction sites may include dangerous tasks involving the handling of high currents and voltages or high levels of skill, such as modulating the force with which screws are tightened. However, against the background of the aging of the population and declining birthrates, the widespread deterioration of infrastructure, and other factors that have emerged in recent years, the shortage of workers who can deal with such front-line tasks is becoming an increasingly serious issue. Operability of connectors is being improved by developing new technology continually from the standpoint of them being operated by workers. The use of connectors can provide some merits including simplified operation and safety measures for electric shock by way of a lock mechanism. There are expectations that connectors will contribute to resolving the problem of labor shortages, and to enhancing the ease with which work can be performed, and the components are playing an increasingly important part in the shift of people towards higher value-added work.

Contribution to Technology

Development of the division of labor

Utilization of existing technologies and physical assets

Many of the digital devices that make our societies better are assembled from a variety of modules joined by connectors. Being able to assemble these devices using connectors eliminates the need to concentrate production in one place, which enables module production to be allocated over multiple regions worldwide, and to multiple manufacturers. This has permitted countries and manufacturers to drive innovation by concentrating their resources in areas where they are competitive.

Furthermore, using connectors to attach additional modules enables functionality to be extended while leveraging accumulated design concepts and existing assets. The recent spread of vehicles equipped with automatic braking is a good example of this. Automatic braking functions were realized by adding new modules, such as sensors, cameras, and control units, to existing functionality for driving, turning, and stopping. We will close in on our goal of achieving autonomous driving by continuing a process of evolution whereby we leverage the structure of existing vehicles and extend it with new functionality. By enabling such combinations of equipment and modules, connectors play a mediating role in technological innovation.

Contribution to The Environment

Effective use of resources (reduced waste, longer life)

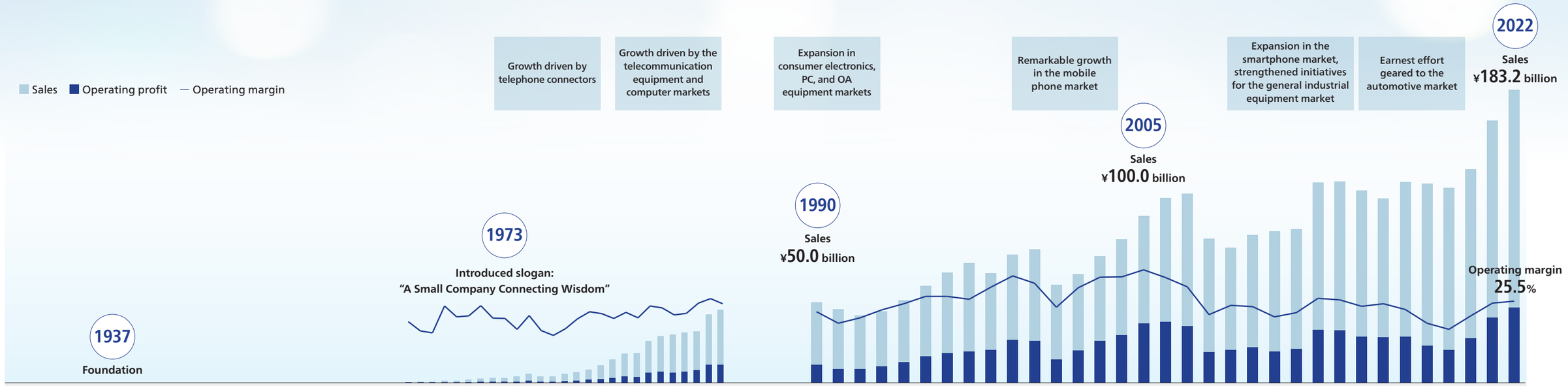
Promotion of energy transition (from fossil fuels to electricity)

Two of the major environmental issues that the world currently faces are achieving a sustainable society and addressing climate change. The connect/disconnect function of connectors enables the replacement of only certain modules. Because this function enables reuse it by enhancing device repairability and maintainability, it leads to reductions in waste and longer equipment lives. A good way to illustrate the benefit is to see it as being akin to replacing a battery in an electronic device in daily life.

Connectors are also connecting parts that serve as the pathway for electric signals. The energy transition from fossil fuels that emit large amounts of CO_2 to electricity is an important initiative for addressing climate change. In line with progress being made in the electrification of vehicles, exemplified by EVs, the structures of devices and equipment are also undergoing electrification and incorporating digital technology, resulting in high demand for electrical connecting parts. These significant social changes are bringing about changes in devices and equipment for various markets, and connectors continue to evolve as a supporting component.

We Contribute to the Realization of a Sustainable Society

History of Value Contribution



Vacuum tube era

Vacuum tubes consume large amounts of electricity, which required components capable of withstanding high levels of heat and voltage, and this led to large cable connectors becoming mainstream.

Spread of ICs (integrated circuits)

The shift to low-voltage ICs and the development of printed circuit boards led to the birth of small board connectors. Electronic equipment was also downsized.

Spread of surface-mount technology

Connectors are downsized and increasingly use narrower pitches. Devices gain functionality and become suitable for mass production as a result of surface-mount automation and increases in the number of modules used.

Development of high-speed, high-frequency technology

Board frequencies exceed the GHz band, and connectors evolve with high-speed, high-frequency characteristics. The speeding-up of electronic equipment accelerates further.

1937 to 1950s

Responding to social needs

- Technology gap between Western countries and Japan
- Post-war reconstruction in Japan

Our contribution

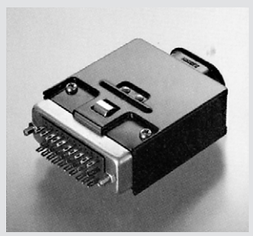
We respond constructively to the Defense Agency's policy of domestic production of wireless equipment, for which Japan had previously been using items disposed of by the United States. Although our efforts were regarded as a reckless attempt by a small company, we succeeded in developing the first domestically manufactured connector, and contributed to the securing of domestic technology.

Machining-processed coaxial connector BNC series

By forging ahead with our ideas despite material shortages and insufficient facilities, we used this opportunity to help the major shift in policy from copies to original products.

1960s to 1980s

- High economic growth results in major rollout of communications infrastructure, leading to labor shortages



Rectangular interface connector
1300 series (Minicon V)

The rapid diffusion of telephones led to the efficient installation of telephone equipment becoming a pressing issue. As a result of proposing the use of connectors to create connections between equipment, our products were adopted as the standard by Nippon Telegraph and Telephone Public Corporation (now NTT).

This resulted in enhanced operability and reduced the time required to find faults, which supported the development of the telephone network as a lifeline.

1990s to 2000s

- Progressive international division of labor driven by the development of communications networks
- Expansion of global market leads to mass-production/consumption society

The spread of mobile phones led to the era of an electronic device for every person, and has required levels of mass-production that are an order of magnitude higher.

Pressed micro coaxial connector FL series

We achieved mass-production for antenna connectors by successfully shifting from small-lot manufacturing using machining processing to production by stamping with press facilities. By implementing significant product downsizing and cost reductions, the antenna connector acquired position of de facto standards and we contributed to the later development of wireless industry.

By facilitating the development of real-time communication, we simultaneously played a role in supporting international division of labor.

2010s onward

- Society in which everything is connected
- Electrification/digitalization expands in all markets

With the rise in the number of applications for electronic components, although there is a trend towards common technologies that cut across different segments, there is also a requirement for specifications to be tailored to the usage environment.

- Responding to requirement for heat and vibration resistance in automotive applications
- Design optimized for automated assembly by robots

Floating board-to-board connector
FX26 series

One action FPC connector
FH72 series

Our strategy of focusing on the three pillars of consumer equipment, automotive, and general industrial equipment, has led to the acquisition of knowledge in a wide range of markets, and we have contributed to the development of society by creating new connectors that are the first of their kind.

A Message from the President

We will connect the “knowledge” of our customers, subcontractors, and other stakeholders, and continue to create products that differentiate themselves, and meet and exceed the expectations of our shareholders.

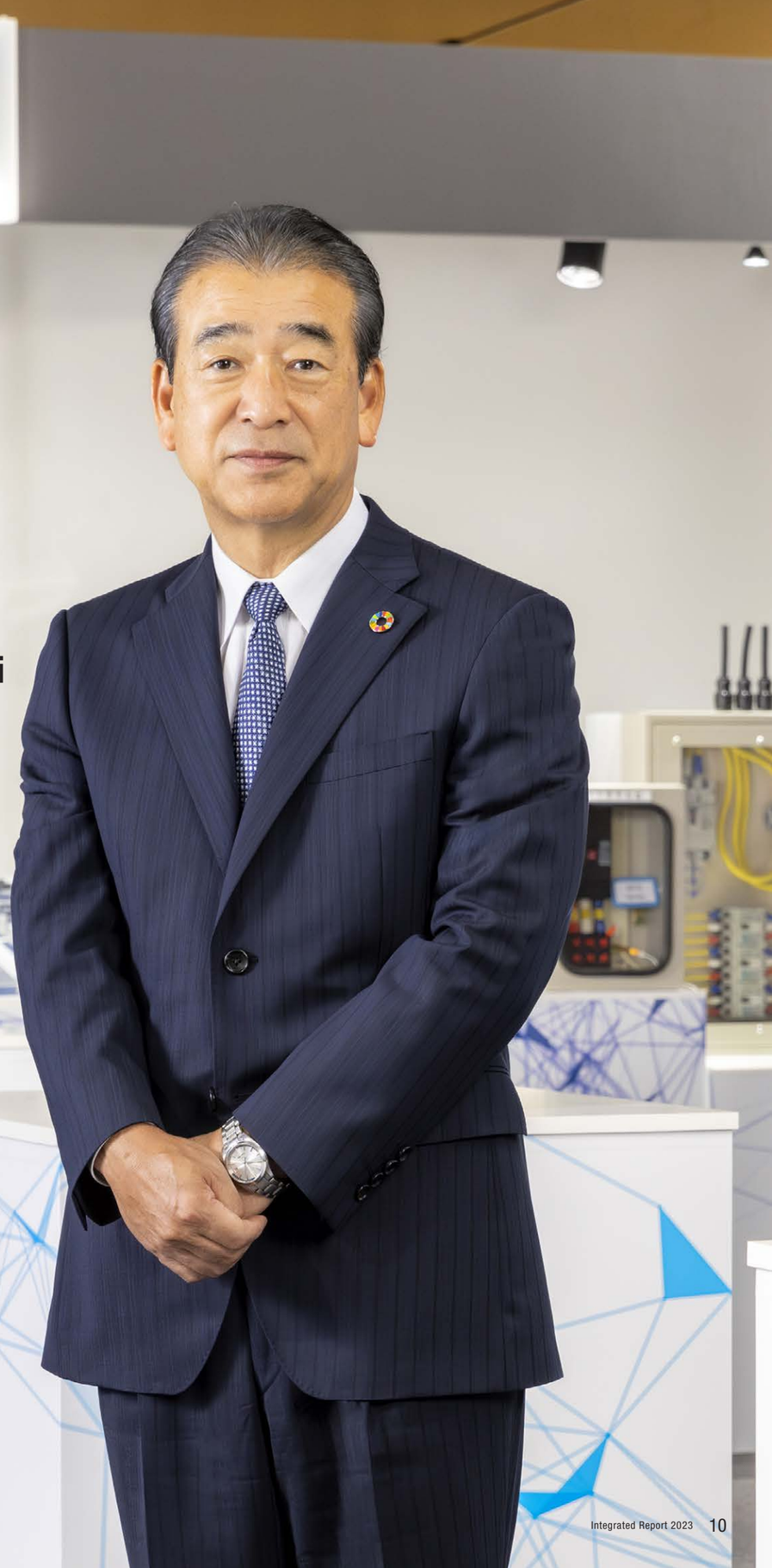
Fiscal 2022 review and mid-term initiatives

In fiscal year 2022, the Hirose Group achieved sales of ¥183.2 billion and an operating margin of 25.5%, which has replaced the past highest record. While sales were 1.5 times larger than the ¥121.8 billion in fiscal 2019, when the shortage of materials due to COVID-19 pandemic emerged, we received customer complaints for not supplying enough connectors. That was a period that made us keenly aware of how important a stable supply was. Connectors that we supply are electronic components that include not only standard products but also products requiring a huge variety of variations to suit the customer’s equipment. It is critical to have a flexible production system and the organizational ability to adapt to changes in demand, since connectors frequently face supply shortages during chaos in the supply chain or when industry is rapidly growing.

Against this backdrop, we are working on our key medium-term initiatives, which include the construction of a new factory in Koriyama and the expansion of the Hirose Korea Precision Connector Center and factory, in order to strengthen production technology for [Automotive], [Industrial equipment] and [Consumer/Mobile] products. Although we are experiencing a decline in orders due to inventory adjustments, we believe that demand for connectors will increase in the medium term and our investment in the future will continue unabated. To promote the standardization of equipment to improve investment efficiency, the Tohoku Advanced Technology Center will be established to serve as a core for the development and manufacture of automated machinery. We will focus on strengthening production technology capabilities and training engineers as a driving force for developing new products. At the same time, to improve our ability to respond to change, we have medium-term infrastructure plans to renew our SCM system, which should help us to strengthen the foundations of our business by increasing our speed of delivery and our ability to respond to fluctuations.

Differentiating products that serve as the core of our business

Customer demand for new connectors is increasing as technological innovation accelerates. Consumer electronics has become a lifeline for each and every one of us, while the automotive industry is at a once-in-a-century turning point called CASE. Industrial equipment is not only affected by these trends but is also evolving into equipment that adapts to the shift to DX, GX, and



Kazunori Ishii
President and
Representative Director

SX technologies. With the advance of digitization, electrification, and networking in all industries, there are increasing expectations for connectors, which are components that connect signals and power. Our mission is to create new products that differentiate themselves, and meet and exceed such expectations.

In November-December 2022, the Hirose Group held the Hirose Technology Exhibition for four days. This technology exhibition is a closed invitation-only event, featuring "displays of new products and future concept items," and "all-engineer exhibition guides." For the Hirose Group, which seeks to offer high added value through differentiated products, this exhibition provides valuable opportunities for our customers and our engineers to exchange ideas about future devices. At the venue, we showcased a diverse range of exhibits displaying actual products such as wearable devices as well as automotive and industrial equipment. This generated ample feedback from customers who drew new inspiration from the design philosophies of different industries. Held every three years, this year's 15th exhibition attracted a total of around 7,700 domestic and international visitors. Organizing such a large exhibition requires a great deal of energy, but it is well worth the effort as it provides unique and valuable opportunities for engineers to listen to feedback directly from thousands of customers. For connectors, which are the connecting components, the "knowledge" of the developers of the equipment in which they are mounted is indispensable, and we are working on various ways of coming into close contact with our customers to "know our customers."

Inseparable Principles and the HIROSE Philosophy

The Hirose Group has its corporate philosophy of being "A small company connecting wisdom." As I mentioned earlier, the "knowledge" of our customers is indispensable for the development of products that differentiate themselves. One of our strengths is the broad market base realized by our three-pillar strategy encompassing Consumer/Mobile equipment, Automotive, and General industrial equipment. This allows us to take inspiration from equipment design in different fields and provide customers with optimal solutions. Furthermore, the basic technology for such solutions is created through co-creation with our subcontractors having such technologies as pressing, molding, plating, and assembly. New manufacturing methods are created by combining each other's specialized technologies and "knowledge" from industries other than connectors. The Hirose Group's growth cannot be achieved on its own, and it is required of Hirose people to always acknowledge themselves to "be small" and to connect internal and external wisdom with an honest and humble attitude. Based on this recognition, Hirose Group engineers not only design but also actively visit customers with sales staff, who in turn gain knowledge outside their area of responsibility to broaden the range of their proposals to customers. It is our strength as a team in connecting wisdom that is our strength and source of competitiveness.

The HIROSE Philosophy is the verbalization of this corporate culture. In these times of rapid change, and moreover, because connectors are components that are influenced by the latest trends in customers' equipment, it is necessary for each and every employee to be highly sensitive and to work autonomously. The HIROSE Philosophy serves as "The Ultimate Standard of Thought and Behavior" for such actions by employees. The strength as a team built around the fulcrum of the HIROSE Philosophy is the very source of our competitiveness, but with the advent of the New Normal triggered by the COVID-19 pandemic and the shift in our business strategy from a consumer electronics to the three pillars, I feel the need to update our understanding and the way in which the HIROSE Philosophy is infused. As such, for fiscal 2023, we have planned to resume the activities to Connect and Evolve with the HIROSE Philosophy. The Philosophy Committee will play a central role in the Connect and Evolve activities, and I myself will also travel to each of the sites worldwide to pass down the philosophy through dialogue with the local leadership. I believe that corporate culture is a greater driver of success than any other strategy, and putting it into practice is what the Hirose Group is striving for.

Future challenges

The other day I asked a customer of a world-class manufacturer straight out why they had chosen the Hirose Group, a Japanese manufacturer, over many other connector manufacturers. In response, they replied, "You are the only manufacturer that excels in technology and manufacturing, keeps its promises, and shares our values." Offering valuable products to customers and earning their trust is what the Hirose Group is all about, and I was pleased that we were able to share our values beyond national borders. It is owing to our practice of respecting this trust, that we have been able to weave a history of more than 80 years.

For fiscal 2023, we have set a medium-term business target of "continued sales growth and a highly profitable structure with an operating margin of more than 25%." The continued pursuit of such a high operating profit margin represents the Hirose Group's will to continue creating new products that meet and exceed customers' expectations and earn their trust. We are committed to contributing to our customers and society as a company that creates new value, with the Inseparable Principles and the HIROSE Philosophy serving as the fulcrum.

Co-creation with Our Stakeholders

**"Co-creation" is to put into practice the Hirose Group's unchanging philosophy of being "A small company connecting wisdom."
We aim to enhance corporate value by listening to our stakeholders and co-creating new value by connecting our own and external wisdom.**

Aim to increase our medium- to long-term corporate value through dialogue with capital markets regarding the Hirose Group's financial and non-financial information

Grow together by respecting each technology while connecting wisdom of our subcontractors and the Hirose Group

- Share the Group's procurement policy
- Organize the QC Circles
- Share operational improvement examples

Organizing QC Circles

The Hirose Group promotes QC Circle activities involving not only each plant but also our subcontractors, and each site holds a meeting to present the results of activities and regularly follows up on the status of activities. The company-wide QC Circle Convention, which brings together the best teams from each manufacturing site, was first held in fiscal 2008 and celebrated its 16th anniversary in August 2023. Through improvement activities promoted by the cooperation and collective wisdom of all members, we aim for the growth of each individual, including those at subcontractors, and raising awareness of quality, thereby revitalizing the workplace and achieving sustainable growth for the Company.

Create workplaces where employees are motivated to leverage their full capabilities and where both the employees and the Company can grow together

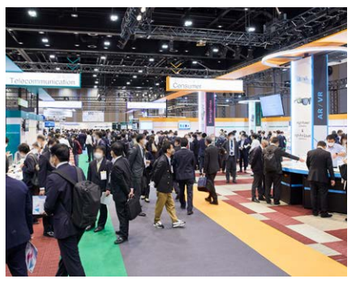
- Promote the health and productivity management
- Employee-led "Iki-Iki" Project
- Connect and Evolve with the HIROSE Philosophy


Events for employees hosted by the "Iki-Iki" Project

The "Iki-Iki" Project is primarily intended to promote communication across organizational boundaries and to enhance the work-life balance of employees. We are engaged in voluntary activities primarily driven by young employees. Organized on the initiative of the project members, the "Find your base color meeting" provided a unique opportunity for the participating employees to interact with other employees who do not have daily contact with, around the theme of the color that suits them, as diagnosed by a professional curator. Through such activities as these, we cultivate a corporate culture in which employees find it comfortable to work in.

Achieve a convenient and sustainable future with our customers by proposing solutions that leverage our expertise as a connector manufacturer

- Holding Hirose Technology Exhibition
- Holding technology interactions events
- Joint development


Holding of Hirose Technology Exhibition in FY2022

The Hirose Technology Expo, held every three years, was held in Yokohama and Osaka in fiscal 2022 under the theme of "Create the Future, Connect Today." Personnel giving explanations were all engineers from the Hirose Group, and there were exchanges of opinions between the engineers from Hirose and those from the invited customers here and there. The event was well received by participants for the hands-on experience in different fields and new ideas it offered, and attracted 7,686 visitors, an increase of approximately 15% compared to 2019, when the event was held before the COVID-19 pandemic.

As a member of the local community, achieve sustainable growth of the Hirose Group and society

- Hosting workshops for children
- Donation of our products for students' cultural activities
- Support for local sports teams


Holding of the workshop for children

In cooperation with the community, we also participate in educational events for families living in the neighborhood. We organized a workshop to build motor-driven miniature cars using recycled parts, which provided us with the opportunity to assemble them with children. We hope that by connecting the parts of miniature cars with connectors, children will develop an interest in making things, and that we, a manufacturer, and the local community will grow together.

Value Co-creation Model

Ideal Vision

Co-creating
Our Future Society with
the “Power to Connect”

Foundation of our values

Global customer base
Number of customers: more than **3,000**

Global network
Plants and offices:
55 locations in **15** countries/regions
Subcontractors: more than **800**

Technological development-oriented
R&D expenses: approx. ¥**12** billion/year

Human capital who share HIROSE Philosophy
Number of employees: approx. **5,000**

Stable financial condition
Operating margin (for 30 years): **26.1**% (Avg.)

Natural capital
CO_2 emission: approx. **46** thousand t-CO_2

Business activities

Key word: “Power to Connect”

Create the *New.*

Original and differentiated products

Hypothesis verification cycle

Close relationships with leading companies

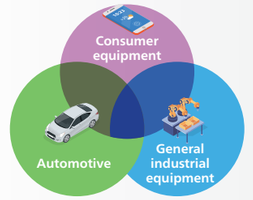
key technology
High-speed
High-frequency
High-power
Downsizing

3C+1C perspective
+1C (Co-operator) collaboration
Semiconductor/cable/PCB manufacturers, etc.

Broad development for new usage

Feedback knowledge and insight

Three-pillar market foundation



Flexible production framework

Dissemination of the principle of manufacturing

Manufacturing with compact standard equipment

Subcontractors network

Verification at manufacturing sites/feedback

A corporate culture of challenge

Mindset to aim for high profitability

Culture of teamwork

Extensive expansion of solution proposals (number of products: 50,000)

Build the relationship of trust with customers

Expand global supply structure

Development of global human capital

Achieve the stable and high profitability

Contribution to society

Evolution of electronic devices

Contribution to labor saving by reducing man-hours

Promote the electrification of energy

Improved ability to repair and maintain electronic devices

Contribution to energy conservation by downsizing

Inseparable Principles

A Small Company Connecting Wisdom

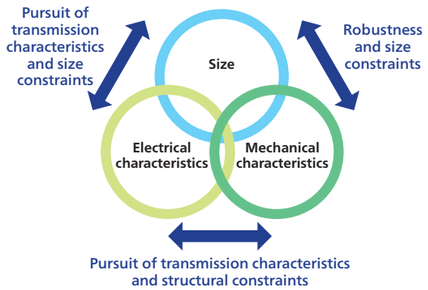
HIROSE Philosophy

The Six Values

- Connecting wisdom
- High Added Value
- The Principle of “Being Small”
- Always Taking the Lead, Pursuing the Cutting Edge and Achieving Differentiation
- A Small Company of Smart People
- Continuing to Be a “High Flier”

Mechanisms for Value Co-creation 1

Connector markets



A wide variety of market and customer requirements depending on the applications on which the connectors are mounted

❶ **Product characteristics**
Huge variety of products are existing to meet a wide variety of requirements

❷ **Competitive environment**
Competitors focus on target markets to increase their expertise

Characteristics of the Hirose Group

Management

Pursue high added value rather than expansion of scale
- Focus on markets where technological change is occurring; do not just to pursue sales scale pointlessly
- Management engages in pricing and keeps to check evaluation from customers and markets at each product

Marketing and R&D

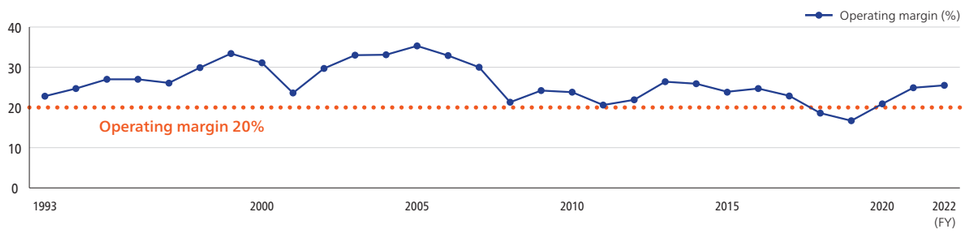
Prioritize original and differentiated products
- Rationalize and align with HIROSE Philosophy
- Engineering divisions are to be organized according to product, pursuing technical specialization
- Build the mechanism in which numerous customer needs are aggregated around three-pillar business and hypotheses are verified (e.g., Hirose Technology Exhibition every three years)
- Sufficient R&D expenditure and a stable financial foundation

Manufacturing

A structure that is resilient to demand fluctuations
- Network of subcontractors
- Flexible production mix realized by compact standard equipment

Integration of Hirose technology and knowledge of subcontractors
- Creation of the Hirose Group's unique manufacturing philosophy and its development through verification at the production lines
- Joint R&D with the introduction of knowledge of subcontractors

Operating margins in past 30 years



Development of products and expansion of solutions

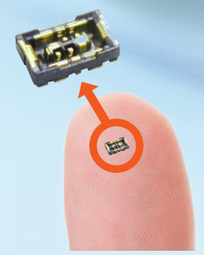
Expansion of product lineup

Expertise shared with cutting-edge customers and record of adoptions

Propose our differentiated connectors to manufacturers with cutting-edge technologies
Proposing new value

Entry into other markets through development for new usage and feedback on product features
Connecting the knowledge of customers

Supply capability with a product range that meets a wide range of customer needs
Provision of abundant solutions



Example: Propose the world's smallest advanced connector for increasingly downsized consumer devices

Product development	Original and differentiated products	Development of product variations	Sales expansion of existing products
Sales channels	Emphasis on direct sales		Emphasis on sales through distributors
Manufacturing	In-house manufacturing		Outsourced manufacturing

Mechanisms for Value Co-creation 2

Marketing and R&D

Hypothesis verification through Hirose Technology Exhibition (private exhibition)

The exhibition is a place where hypotheses about the connectors required for future devices are introduced to customers through exhibits of new products and conceptual products, and where we can discover potential new needs.

Characteristics of Hirose Technology Exhibition

▶ Future-oriented technology exhibition

Most of the products on display are new products, products under development and conceptual products, which helps customers to conceive of future products.

▶ Abundant exhibition of adoption examples (actual equipment)

We exhibit applications that have adopted our products through cooperation with customers in various segments in consumer equipment, general industrial equipment, and automotive (some are displayed in their disassembled form).

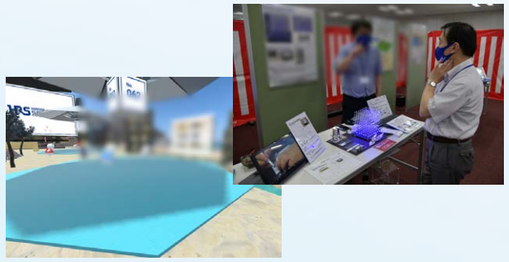
▶ Engineers with competent expertise explain the exhibits

All explainers are development engineers, so visitors can gather expert information by exchanging views between engineers.

Zero One Festival (fiscal 2021)

An in-house event where ideas are freely expressed and showcased to foster a corporate culture of challenge

- **In-house exhibitions organized by engineers (organizing committee members are mainly young engineers)**
- **Free participation, with no restrictions on exhibitor eligibility based on age, position or division**
- **Exhibits are not limited to connectors; software and ideas are also accepted**
- **The winner is decided by a vote by the participants and awarded**

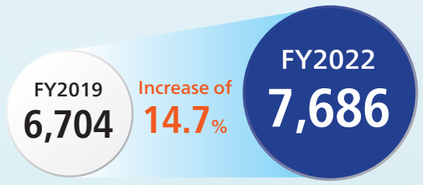


*The FY2021 event was held in a hybrid format of real and VR exhibitions, in order to prevent COVID-19 infections

The 15th Hirose Technology Exhibition for fiscal 2022 was held

- **Yokohama**
  Period: November 10 (Thu) – 11 (Fri), 2022
  Venue: North hall, PACIFICO Yokohama
- **Osaka**
  Period: December 8 (Thu) – 9 (Fri), 2022
  Venue: Osaka International Convention Center

Number of visitors

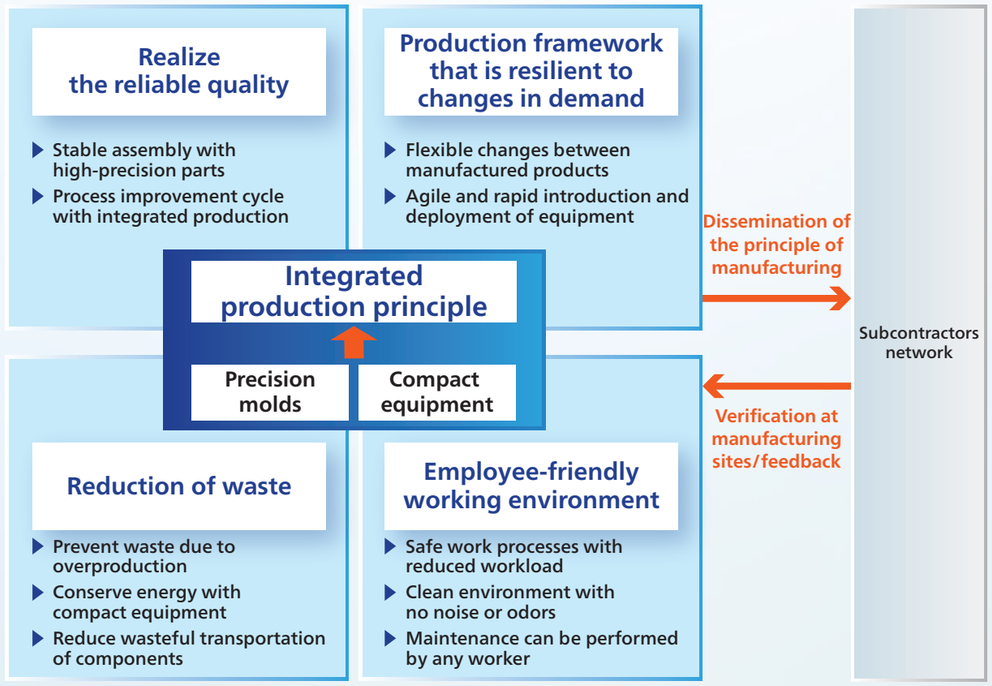


*Exclusive to invitees only

Manufacturing

The Hirose Group's three-pillar strategy requires the ability to produce variable types of products in variable quantities in order to provide a wide variety of products to markets with different characteristics, which are consumer equipment, automotive, and general industrial equipment markets. At the core of this is the principle of manufacturing using compact equipment and precision molding dies.

This principle originated from the belief that "if you stick to principles and eliminate waste, you can make things smaller," which was told to us by a subcontractor that specializes in small precision molding dies. We have pursued downsizing of assembly equipment and molding dies based on the idea that everything other than the equipment parts used to form the connector shape is waste. In order to perform efficient processing with the minimum energy to make connectors, the equipment parts have a high degree of precision and are created from well-thought-out designs. The Hirose Group's unique strength lies in its pursuit of downsizing its equipment, as opposed to the idea that mass production with large equipment is more efficient. Our downsizing enables the flexible introduction and deployment of equipment and the switching of production types by changing components and settings, which is an important factor in supporting the ability to produce variable types of products in variable quantities.



In addition, the pursuit of small size resulted in the principle of "integrated production," which consolidates all processes up to assembly, and has become the core of Hirose Group's high quality. The integrated production aligns the production line within sight, making it possible to grasp the issues at each process at a glance and to quickly go through the manufacturing improvement cycle. The Hirose Group's compact equipment doesn't need major improvements that large equipment needs, such as separating the production line from the vibration effects of such equipment and using a crane to transport molding dies. Through the use of equipment that any employee can operate, we are able to adhere to the manufacturing principle of "if there is any problem, stop the production line and make improvements," which is the basis for the quality trusted by the world's leading manufacturers.

A Conversation

Developing Products and Expanding Their Variations

W.F.
General Manager of engineering department

Developing Products and Expanding Their Variations

The Hirose Group's business model has a strong relationship with the characteristics of connectors. To help you understand our business, here is a conversation between a former design engineer and a former sales representative, using the DF40 series, one of our main products, as a subject matter.

N.Y.
General Manager of sales department

To start with, will you briefly introduce the "DF40 series"?

W.F. The DF40 Series is a range of connectors that directly connect two printed circuit boards (including FPCs) within electronic devices. They allow boards to be split for layout, helping to minimize the size of the customer's electronic devices and providing greater flexibility in terms of its shape. The connectors themselves are small, about the size of a grain of rice, depending on the product.

They are long-selling products, with sales still growing 18 years after its development in 2005. They were first used in digital cameras, then in consumer products such as laptop PCs and smartphones. Now they are used in all kinds of applications, such as in-car cameras and general industrial equipment.

With technology advancing, why are they used in such a wide range of markets over a long period of time?

N.Y. It is because the DF40 is just in the right size to handle for customers. Connectors, which are the connecting components, are mounted on the board or mated with other connectors, so if the connectors are too small, they are difficult to handle. Although there are many connectors smaller than DF40 available today, the demand for connectors in the size of DF40 is high in a wide range of markets, as the size of a connector must be suitable for the internal space of electronic devices.

The other strength of the series is that it offers many product variations. Generally, in the development of electronic devices, the design process first focuses on semiconductors, and specifications for the connector are finalized at the final stage in consideration of available space left and ease of assembly of the device. It is quite common for connector specifications to change at the last minute from what was originally requested, and it is very convenient for the customer to have a wide range of variations available to accommodate the change in a timely manner.

You mentioned that one of the strengths of the series is its wide range of product variations; was the series designed with such variations in mind?

W.F. No, we did not plan to give it such variations at that time. Rather, it is fair to say that the series has eventually grown to this level. Hirose is a company that focuses on originality in development, so we did not have any customers in mind at the development stage and did not offer that many variations. The development started with a small-sized connector suitable for high-density board design, in line with the technological trends of the time. We then introduced them to visitors at the Hirose Technology Exhibition and received their feedback to see how they would be received. The foundation of the DF40 lineup has been built around numerous requests we received from our initial customers who liked the products and our response to those requests by offering a wide range of product variations. I really appreciate meeting with customers because it gives me inspiration for developing new products.

Tell me about what triggered the first adoption of the series.

N.Y. The first adoption was for digital still cameras. The DF40 is characterized by the fact that it is not only compact, but also has protrusions on both the plug (male) and receptacle (female) sides of the connector to absorb the impact of a drop. These features were appreciated and led to the adoption, as digital cameras are often dropped by users.

W.F. I know engineers at Hirose are constantly told to "always include one thing that differentiates itself from others when designing." We also include innovations that have little to do with technological trends.

N.Y. One other thing to note... we were quite quick to respond. Then, as now, the customer's specifications for connectors often changed at the last minute in the final stages of development, but we were able to help by being able to develop and deliver a variety of products at short notice. As new digital camera models are launched in spring and autumn, a variety of products with different connector heights and number of pins are required to match the models. At that time, we had a very short development cycle, starting with the production of molds and finishing with the start of mass production in just three months or so. This was only possible owing to the great support from engineering and manufacturing teams. Connectors are the final component to be selected, so Hirose's ability to respond quickly through cross-functional teamwork within a tight timeframe is certainly one of our strengths.

W.F. Indeed, speed was very important. Timely information gathering was essential for this, and every time I visited the customer, I was able to meet with key design personnel and felt that our sales team had built a strong relationship of trust with the customer. Thanks to the close exchange of information on how the connector would be affected by the customer's ongoing design, we were able to establish a system to achieve speedy responses.

N.Y. Engineers talk best with other engineers, so the sales representative should play the role of a coordinator. Obviously the key people in the design are important, but equally important is the ease with which the connectors can be worked on, for example in terms of mating and board mounting. So, I also visited our customers' manufacturing sites to promote our products extensively to key people working in their plants and quality control departments. So much so that at the time, some of the customers told me that they received more business cards from Hirose than from any other supplier. Connectors, a mechanical component, is a business that involves a variety of people, so it is essential for sales people to have a close relationship with customers.

A Conversation Developing Products and Expanding Their Variations

Our ability to form cross-functional teams that act quickly within tight timeframes is one of our strengths.

Did you face any manufacturing challenges?

W.F. One of the challenges was to manufacture connectors by plating after integral molding, which was the first attempt for connectors. Integral molding is a technique where resin is poured into a molding die fitted with terminals to form a single unit, achieving smaller sizes than with conventional manufacturing where the terminals are built into the case. This was a technology for which we had little experience at the time, and we were able to implement it with the knowledge of our subcontractors with extensive experience in integrated molding.

In addition to this, we have introduced the technology of gold plating after integral molding to achieve the reduction of the number of man-hours required for plating and to plate only the necessary areas cleanly. Again, we worked with a plating subcontractor to implement this technology and jointly acquired a patent for it. This technology has been increasingly important now that downsizing is progressing, and Hirose has received an overwhelming reputation for excellent quality in small-sized connectors in the size of a fingernail, which is a source of differentiation that no other company can replicate.

Other improvements included achieving efficiency by design by standardizing the plug (male) side of the connector, so that even if there were more variations with different connector heights, all that was needed was to change the receptacle (female) side.

Following digital still cameras, how did you explore other applications?

W.F. In general, consumer equipment leads the way in downsizing and other markets follow this trend, and the market expands this way. While product size follows this trend, each market has different requirements for connectors, so we are increasing the number of product variations to meet those requirements. The next application after digital cameras was laptop PCs for overseas markets. These markets required us to achieve high-speed performance and noise endurance for display connections. So we modified the terminal design to accommodate shield metal and high-speed characteristics. It was more challenging than developing connectors with different heights and pin counts, but we achieved it in close cooperation with the locally stationed designers and by having close communications with our customers. For this application, we anticipated from the very beginning that the demand for this product would be high.

On the other hand, the demand for in-vehicle cameras was completely out of our sight at the development stage. The recent development and increase in the volume of in-vehicle cameras have created a demand for smaller connectors than ever before, and demand is now growing in this area. As our connectors have improved in terms of quality, cost and delivery through fierce competition in the consumer market, automotive customers must have found this to be an advantage. Since heat resistance is a key element for automotive connectors, we developed a variation with different terminal materials and shapes. These products were not planned from the beginning of development and have been developed as the result of sales and marketing activities to a wide range of markets. The range of applications for DF40 is so vast that we have more customers than we can keep track of, including small-lot projects.

N.Y. One thing that is unique to connectors is that products in previous generations are still adopted. The DF40 is rather large by the standards of today's cutting-edge products, but if you have enough space for your equipment, the DF40 is easier to use. They come in a good size, and are sturdy and easy to assemble. The fact that older products are not always replaced by cutting-edge products is a feature unique to connectors, which are mechanical components. Products that have been in production for a long time have been repeatedly improved and are free of defects, which is another advantage.

What prospects do you have for the future, from your experiences with DF40?

N.Y. I think one of the strengths of Hirose is that it has and continues to have wide variations. The development of electronic devices does not necessarily progress in a one-way direction. With every new module that is developed with a new function, past connectors that are suitable for it could be rediscovered as relevant. Focusing only on a current best-selling product will not help its series grow into one like DF40. I believe that this kind of accumulating a series of products is important in order to offer products to our customers in a timely manner.

W.F. Connectors inside electronic devices are used in a variety of applications across fields, and DF40 has a large number of customers that even we cannot keep track of. In order to develop original products and make them widely accepted, it is important to gather a wide range of information about market needs, and we would like to gather customer feedback which I mentioned earlier to develop a new series of products that replicate the success of the DF40 series. I also value our culture in which people are not afraid to make mistakes, because many failures are likely to happen in the creation of new and original products.

To develop original products, gathering a wide range of information on market needs is essential.
We want to develop new products that replicate the success of the "DF40 Series."

Risks / Opportunities

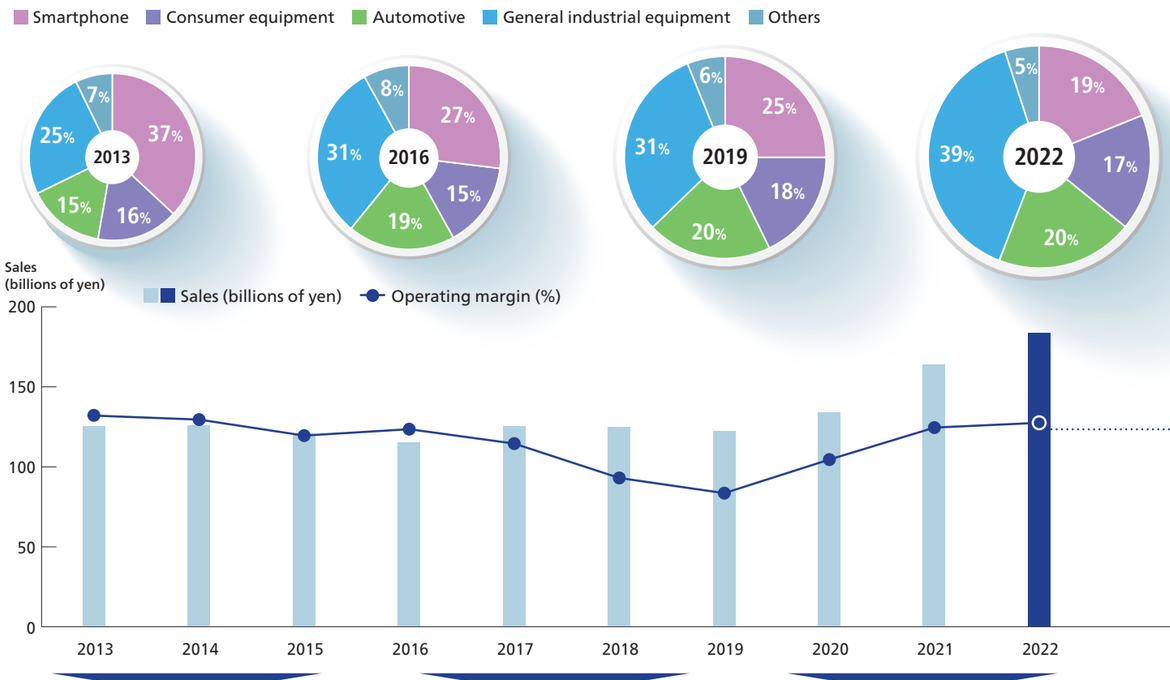
Megatrends	Characteristics of the Hirose Group and its connectors		Risks / Opportunities	Our initiatives
Demographic changes Population growth at global level and declining birthrates and aging populations, particularly in developed countries	▶ **The Hirose Group has R&D and head office functions in Japan, a country that is facing the challenges of an aging population and declining birth rate ahead of other countries, with nearly a half of its production capacity located in Japan.**	Risks	• Labor shortages due to a declining working population • Increasing labor costs due to the competition for talent • Shrinking market due to the declining consumer purchasing power	• Initiatives for deepening human capital development (reinforcing investment in human capital) • Strengthen the development of connectors for industrial equipment with a focus on changeover points in smart factory • Promote the production methods and standardization in response to variable-type, variable-volume production
		Opportunities	• Evolution of equipment and increased demand for connectors due to promotion of factory automation & unmanned operation • Market expansion due to progress in automation in areas other than factories (logistics, medical services, agriculture, etc.) • Emergence of new equipment to extend or replace functions performed by humans	
Climate change Realization of carbon-free society by implementing mitigation and adaptation measures against global climate change	▶ **Connectors are manufactured with electric power** ▶ **The Hirose Group has established its customer base with the world's leading companies.**	Risks	• Loss of customer trust due to our poor response • Impact on our sites by infectious diseases and floods resulting from climate change • Increased costs due to compliance with excessive regulations	• Develop the automotive sector into one of the three pillars, focusing on the changeover points to CASE • Proactive introduction of renewable energy to our sites and response to the initiatives • Relocation of Koriyama plant with high flood risk.
		Opportunities	• Increased use of connectors due to energy shift from fossil fuels to electricity (EVs are a typical example) • Increased demand for connectors due to the enhancement of power infrastructure such as batteries • Increased demand for sensors, IoT devices, etc. due to energy management and energy conservation	
Resource circularity The advent of a recycling-oriented society in response to the challenges of resource scarcity caused by global population growth and mass consumption.	▶ **Connectors are mainly made of plastic and metal parts (+ plating)**	Risks	• Insufficient response to recycling requests resulting in loss of customer trust • Environmental impact of wastewater and industrial waste from plants	• Enhance our downsizing capabilities • Water-saving technology for plating and wastewater management • Promote the use of regrind materials
		Opportunities	• Growing demand for high-quality products that do not cause defects • Resource conservation through pursuing downsizing technologies to make our products more appealing.	
Intermittent advancement of technology Development of various technologies such as AI, IoT, 5G and AR/VR for the advancement of digitalization and the resulting explosive increase in the volume of information	▶ **Connectors, as pathways of electricity and connecting components for functional modules, are expected to develop further along with the progress of electrification in various markets.** ▶ **The Hirose Group should develop its business focusing on four Key Technologies (high-speed, high-frequency, high-power, and downsizing) in a wide range of markets consisting of the three pillars (consumer electronics, automotive, and general industrial equipment).**	Risks	• Decline in existing advantage due to shift in market structure • Risks associated with the transfer of added value from hardware to software	• Establish a business portfolio based on the three-pillar strategy • Provide high-speed transmission solutions through analytical simulation (integration of software and hardware)
		Opportunities	• More variations of connectors due to diversification of applications • Development of expertise in the three-pillar fields due to cross-field development of technology • Explosive growth in information volume increases demand for high-speed technology in connectors	
The world becoming more divided Exclusion of other countries and/or increased restrictions due to political issues between nations. Disruption of production and/or logistics due to disputes, etc.	▶ **Hirose Group has 55 plants and sales offices in 15 countries and regions around the world, with international sales occupying approximately 80%.**	Risks	• Procurement risk due to disruptions in global supply chains • Decrease in value of global companies due to preferential treatment of domestic companies (localization)	• Strengthen collaboration with HIROSE KOREA CO., LTD. • Promote multi-country production and inventories and develop the next-generation SCM suitable for them
		Opportunities	• Earn customer trust by strengthening supply chain resilience • Growing expectations for global support for customers' supply chains	
Diversification of values and increased awareness of human rights Diversification of work lifestyles and personal preferences based on the premise of society becoming more diverse	▶ **In line with the HIROSE Philosophy, we will connect the wisdom of our diverse partners and focus on the development of original and differentiated products.** ▶ **Approximately 80% of the total of around 5,000 employees are from overseas locations, realizing a global workforce with diverse values.**	Risks	• Decreased ability to execute cross-segmentation and cross-functional activities due to decreased cohesiveness in the Group • Wrong predictions about product trends against a backdrop of diversifying needs • Damage to corporate value due to the occurrence of human rights issues	• Passing down of HIROSE Philosophy • Strengthen contact points with customers (e.g. Holding of Hirose Technology Exhibition) • Promotion of health and productivity management • Human rights risk assessment and governance through RBA Audits
		Opportunities	• Diversification of electronic devices and market expansion reflecting personal preferences • Advancement of innovation through the acquisition of talented human capital • Earn customer trust and increase employee loyalty through respect for human rights	

Medium-Term Business Plan

Review and Outline

The Hirose Group places importance on a stable, highly profitable business structure in order to continuously produce leading, cutting-edge, and differentiated products, which are the foundation of its business. To this end, we strive to stabilize and diversify our market portfolio and promote the establishment of three pillars, which are (1) Consumer/Mobile equipment (smartphones and consumer products), (2) Automotive/Mobility-related, and (3) General industrial equipment from a medium- to long-term perspective, aiming for continued growth across segments with our key technologies as the fulcrum.

Shift in the segment (market) portfolio



Shifted the target markets from commodities to specialty areas

With increasing dependence on the smartphone market, expand into other markets with long life cycles and formulate a plan to stabilize operations.

Business Fields

- Step up efforts on automotive and general industrial equipment markets.
- Explore global leading customers worldwide.

Organizations and functions

- Stepped up collaborations with HIROSE KOREA CO., LTD, which became a subsidiary in fiscal 2010
- Established overseas sales offices and R&D offices
  (Nuremberg, Hanover, Paris, Chicago, Shanghai)

Carried out large-scale investments from a medium-term perspective

Substantial expansion of facilities and human capital for the simultaneous launch of new products for general industrial equipment and automotive applications (→ operating margin will decline)

Business Fields

- For automotive, penetrate into the core market segment of "driving, turning, and stopping."

Organizations and functions

- Strengthened quality assurance, testing and evaluation capabilities
  - ▶ Reorganized the department for quality control into Quality Assurance Group
  - ▶ Installed anechoic chambers and shield rooms
  - ▶ Construction of Ichinoseki Testing Center
- Each plant successively acquired IATF 16949 certification, an automotive standard.

Disruptions caused by shortage of materials and strengthening foundation

Significant sales growth in the three pillars and strengthening of the supply system in response to market changes triggered by COVID-19 pandemic

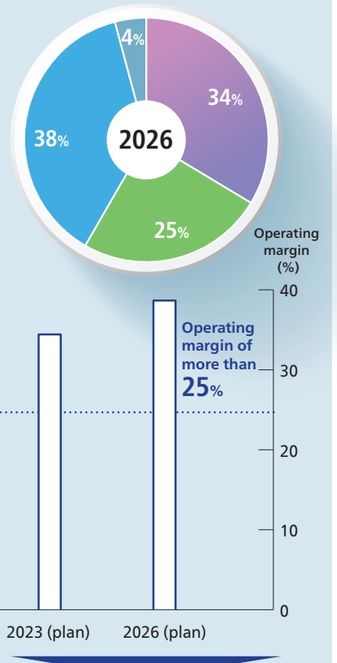
Business Fields

- Consumer equipment: Explosive increase in components for wearable devices
- Automotive and general industrial equipment: Begin contributing to the sales with new products introduced since 2016.

Organizations and functions

- Reorganized sales organization from area-based to market segment-based
- Established multiple production sites to strengthen supply chain
- Work style reforms evolving from the countermeasures against COVID-19 pandemic

Medium-Term Business Plan



Continuous growth supported by the three pillars

Expand the business structure to achieve the sales amount of over ¥200 billion and build a supply chain that focuses on responding to risks.

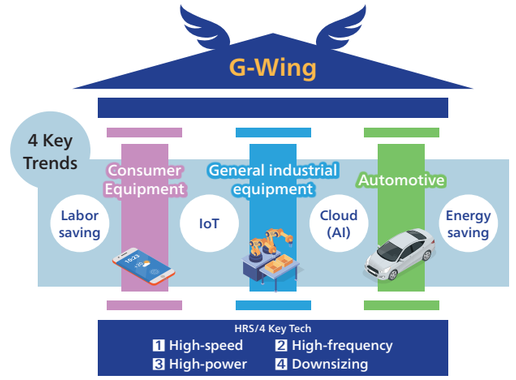
Business Fields

- General industrial equipment: With the smart factory becoming increasingly common, our product portfolio is shifting from older legacy products to more recently developed products. Build the production system centering on automated machinery.

Organizations and functions

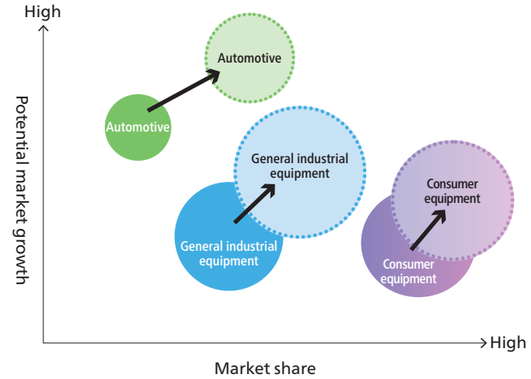
- Enhance capability for production engineering (new Koriyama factory and HIROSE KOREA CO., LTD.)
- Establish the TAT Center to strengthen development capabilities for automated machinery
- Build the next-generation SCM to adapt to resilient supply chains.

Basic policy Achieve further growth through G-Wing



G-Wing means to win globally by spreading our wings to the globe, which is the basic policy for the Medium-Term Business Plan.

With key technologies at the fulcrum, we will strengthen our three-pillar market base across sectors to achieve further growth.



The Hirose Group plans to grow in each of the three pillars, but expects the automotive sector, with its significant changeover points such as those to CASE, to drive the most growth. The sector accounts for around 20% of total sales, which we intend to increase significantly.

The connector market is expected to continue to grow with the advancement of electrification and computerization, and the Hirose Group aims to continue to outpace this growth.